

legality and legitimacy of the state's demand to record the births, deaths, and communicable diseases that occur in his practice including the social diseases, but each year adds some new restriction which if given time must finally include him among the dollar-a-year agents of the state.

Would the inclusion of addiction disease among the reportable diseases bring to light the thousands in the United States in the upper strata of society who use drugs any more than it now does those in this stratum who have either of the social diseases? If not, then it leaves us just where we are today, and we could still apply the remedies that experienced workers propose.

Few, if any, of the drug addicts are true patients of the practitioners of medicine. Those who are such are sufferers from some other complication that requires medical attention. All others may be grossly divided into two classes: the chronic hopelessly incurable addict who wouldn't be cured if he could and who is a permanent institutional case, and the other group who want to be cured but cannot under the existing order of things.

There need be no fear on the part of the medical profession or the police that if proper facilities are provided other than an asylum every one of the latter group will voluntarily proclaim himself and seek relief. At least that is our experience covering a period of five years' effort in this work.

I am not in favor of clinics to furnish drugs to the addict. This has proven a failure and holds no premium toward a cure. In effect it advertises an illegal practice, just as the restricted redlight district once did for prostitution.

I am not in favor of making it a reportable disease because such a law is not enforceable, and I doubt whether our courts of law would uphold it, but I am strongly in favor of hospitalization, convalescent farms or retreats, tightening up of the manufacture and limiting the supply, and imposing heavy prison sentences for vendors and peddlers, and a strong social service organization to aid and follow up the work of final rehabilitation.

Phosphates and Fatigue—During the World War astounding reports were circulated regarding the promotion of muscular activity and the prevention of fatigue in both man and animals through the administration of sodium phosphate. It was attempted during the war to increase the muscular efficiency of the German soldier by the oral administration of acid sodium phosphate in sub-laxative doses with alleged favorable results. Experiments conducted by the United States Public Health Service indicate that the ingestion of acid sodium phosphate does not increase muscular efficiency, but that there is a feeling of well-being experienced by many who ingest the salt. This probably depends on its stimulating action on the intestinal tract, and is due in part to increased elimination of alimentary waste. Acid sodium phosphate (sodium biphosphate) is more pleasant to take than other saline laxatives and is positive in its effects; those subjects who were constipated felt the beneficial effects of this laxative.—*Journal A. M. A.*

A prize has been offered for the best code of morals for co-eds. Perhaps it will occur to someone to enter the Ten Commandments in the competition.—*Albany Knickerbocker Press.*

Among the things now operated on the installment plan in America is polygamy.—*Macon News.*

EDITORIALS

THE INFLUENCE OF SYMBIOSIS ON MICRO-ORGANISMS: THE EVOLUTION OF PARASITISM

Speaking on this subject in Manila eighteen years ago (Philippine J. Science, April, 1908), Musgrave defined symbiosis as representing all phases of association between living organisms, including commensalism and true parasitism, in which either host or parasite is influenced by the other. That address closed with the prophecy that a promising field for research will be found in the study of causes and effects produced by the association of micro-organisms with each other and with their hosts in their environment of complex groups as well as individual symbiosis and the changing conditions in hosts.

Others before have indicated, and several since, that publication—particularly those interested in working out the manner in which animal parasites cause disease—have emphasized the possible group nature of tolerance by hosts and virulence among micro-organisms.

Interest in the problem has been revived recently by Aldo Castellani's able exposition of this subject, the careful study of which by present improved methods offers fruitful promise to patient investigators with a vision.

Reading and reflection on the possibilities inherent in this situation will open up vistas, fire the imagination, and energize the thoughtful investigator to further explore the subject. The action of group on group with group consequences seems quite as important to understand as is the action of an ultimate unit in complex and rarely constant environment.

May it not be that we are inclined to accept carrier, immunity, susceptibility, virulence, non-pathogenic, "balanced" this and that as explanations with too much complacency? What is this and that? What by breeding, what by environment and, over all, what by group association?

There is no reasonable doubt that symbiotic combinations between micro-organisms are responsible for many uninterpreted phenomena in the etiology and pathology of disease.

In animal and plant life from the highest to the lowest forms, we see evidence that certain associations and groupings contribute to virility and growth, while elements in other associations may damage a whole progressive movement quite as effectively as the broken link destroys the strength of the chain.

More light needs to be thrown on the metabolism of host and parasite. We have evidence that changes in symbiosis may produce changes in metabolism and in consequence changes in the pathogenicity of parasites and the susceptibility of hosts. This quite independent of the volume of influence.

That the virulence of pure strains of bacteria are decidedly influenced by the physics and chemistry

of their environment is too well known to warrant discussion. We also know that virulence is even more profoundly effected by the biology of environment, but our understanding of these processes is still far from satisfactory, and in increased knowledge lies great promise.

Life among all living things is perpetuated by reproduction; its extension and accomplishments are largely determined by environment in which association with other living things is quite as influential and needs further study among micro-organisms as it does in man. Friendly associations lead to groupings (symbiosis) which may be mutually helpful; many associations singly or in other groups are harmful and in this warfare with ever shifting fronts, life—microbic or mammalian—is the pawn.

A promising approach to the understanding of specific elements of lower animal life is through a better understanding first of the groups, symbiotic and detergent, in which they have their being and the nature of which surely is largely determinative of their possible danger to man. The most hopeful approach to further understanding of symbiosis appears to be through the study of mixed cultures of ameba and bacteria, this because of the ease with which the animal and vegetable elements may be distinguished under all circumstances and because this type of association seems to be an almost constant, if indeed not an essential one, to the perpetuation of the animal life in extra parasitic existence.

Baumgarten, thirty-six years ago (1890), suggested the probable co-operation between ameba and bacteria in the production of dysentery, and Janowski seven years later called attention to the probability that symbiotic bacteria may determine the parasitic and pathogenic possibilities of ameba in nature and that such specific symbiosis may be carried unbroken into the intestine or that it might be formed in the bowel.

Many years' work with amebas and amebiasis at the bedside, in the morgue and in the laboratory, led this editor inevitably to a similar conclusion and now, many years later, a review of the literature and that work but adds to the conviction of the soundness of these conclusions. Amebas in natural environment, in cultures or within the intestine, with rare exceptions lead parasitic lives in that they feed upon or in some other way sustain life at the expense of other micro-organisms or the living tissues of a host. This symbiosis, even when the parasites are in a mixed bacterial environment, is more or less specific, for certain of the bacteria and the specific character of the symbiosis may be changed in cultures or even largely eliminated.

The whole question of the evolution of parasitism is of intense interest and of great practical importance. It is within the bounds of possibility that the processes of parasitism even in its greatest selectiveness, as for example of tetanus toxin for the nervous system and certain trypanosomas for the cerebrospinal fluid, is evolutionary and there is evidence tending to support this hypothesis with more reason than is sometimes used in explanation of other phenomena having to do with biology and pathology.

In any event, the student will be rewarded for

his pains by studying what for want of a better term may be designated, the animal instincts shown by amebas in culture toward new elements introduced into their environment.

HEALTH MERGERS

The extensive creation of mergers, financial, industrial, commercial, and what-not, are among the most significant movements of recent years. The chief new or recent feature of the idea is the name merger, which suggests that a name may have something to do with the odor of a rose.

Another recent feature of the merger movement is its increasing application to matters of health, sociology, relief, charity, thereby introducing elements calculated to influence the very foundation of society and affect profoundly every individual.

The philosophy of mergers is the same, whatever the field of endeavor, and they are therefore worthy of serious study, particularly when they invade established human-service occupations.

The heart of any merger is centralized, more or less autocratic control, and while this may, and doubtless often does, insure advantages in material matters, it may not follow that it will be equally efficacious in dealing with those moral, social, and charitable attributes which are inherent in individuals, which are in a state of flux and may not be measured in material terms.

Unquestionably, well conceived and intelligently conducted mergers, whatever the field covered, may reduce waste, duplication of effort, and thereby increase the purchasing power of the dollar, stabilize and standardize production and change competition between individuals to group competition, or even replace competition by price-fixing methods. There are examples all about us in mergers of many classes and sizes that supply ample evidence of this fact: encouraging so far. However, when mergers enter the field of sociology, health, and other human services heretofore peculiarly personal, other and vastly more difficult problems arise. It may be possible even here to save dollars by standardizing the treatment of frailties, infirmities and shortcomings of mankind en masse and serving them through mergers also standardized; but what of the individual? Can we succeed in pouring into a common hopper operated by organized effort, service, and the blessed spirit of service, that is an inherent individualized quality of man, and grinding out stereotyped relief to meet the highly individual needs of others with safety?

"Health" mergers, to be more specific, are prominently to the fore, and they are proceeding apace from merger to supermerger—at least on paper and in the intent of sponsors. Extensively mergerized health, medical, social, and spiritual welfare, doubtless would simplify giving and serving and insure at least a steady income and regular hours to those who serve. It would reduce the matter of support to paying taxes or writing a check to the merger periodically—but would it not also tend to simplify life for the supplicants and beneficiaries? In this respect the results of the "dole" and the consequences of mergerized medicine in certain countries